

CLAIMS

What is claimed is:

1. A toy water gun, comprising:

a housing including a handle with a trigger and a water ejection nozzle located thereon;

a water supply tank connected to the housing which can be filled with water;

a water pump located on the housing for pumping water from the supply tank to at least one water pressure chamber;

the water pressure chamber including at least one fixed wall, a first end wall, and a moveable wall which substantially sealingly engages the at least one fixed wall and is slidable away from the first end wall as water is pumped into the water pressure chamber and toward the first end wall as water is discharged;

an air pressure chamber located on an opposite side of the moveable wall from the water pressure chamber and being pressurizable with compressed air to bias the moveable wall toward the first end wall;

an air pump connected to the air pressure chamber for pressurizing the air pressure chamber with a user desired air pressure; and

a release valve in fluid communication with the water pressure chamber so that actuation of the release valve allows a stream of water to be ejected from the nozzle due at least in part to the compressed air acting on the moveable wall.

2. The toy water gun of claim 1, further comprising a spring that biases the moveable wall toward the first end wall.

3. The toy water gun of claim 1, wherein the air pump is connected to the housing.

4. The toy water gun of claim 1, further comprising a first conduit connecting an outlet of the water supply tank to the water pump, and a float valve located in the water supply tank that closes the outlet when the water supply tank is substantially empty.
5. The toy water gun of claim 1, further comprising a first check valve located in a first conduit connecting an outlet of the water supply tank to the water pump, and a second check valve located in a second conduit connecting the water pump to the water pressure chamber.
6. The toy water gun of claim 1, further comprising a third conduit between the water pressure chamber and the release valve.
7. The toy water gun of claim 1, further comprising a fourth conduit connected between the water pressure chamber and the first conduit, and a pressure relief valve located in the fourth conduit.
8. The toy water gun of claim 1, further comprising a pressure gauge that senses a pressure in the water pressure chamber, and a visual pressure indicator connected to the pressure gauge.
9. The toy water gun of claim 1, wherein the at least one fixed wall is a tubular wall, and the moveable wall is slidable within the tubular wall, the air pressure chamber is formed by the tubular wall, the moveable wall and a second end wall connected to an opposite end of the tubular wall from the first end cap.
10. The toy water gun of claim 1, wherein the water pressure chamber expands by movement of the moveable wall as water is pumped into the water pressure chamber, and the air pressure chamber is simultaneously reduced in size.

11. The toy water gun of claim 1, wherein the moveable wall includes a collar extending from a periphery thereof in a direction toward the first end cap, and at least one seal is located on the collar that sealingly engages the at least one fixed wall.

12. A toy water gun, comprising:

- a housing including a handle with a trigger and a water ejection nozzle located thereon;

- a water supply tank connected to the housing which can be filled with water;

- a water pump located on the housing for pumping water from the supply tank to at least one water pressure chamber, the water pressure chamber having a wall that is at least one of moveable and flexible;

- an air pressure chamber located on an opposite side of the at least one of moveable and flexible wall from the water pressure chamber and being pressurizable with compressed air to apply an external force on the moveable and/or flexible wall;

- an air pressure source connected to the air pressure chamber for pressurizing the air pressure chamber with a user desired air pressure; and

- a release valve in fluid communication with the water pressure chamber so that actuation of the release valve allows a stream of water to be ejected from the nozzle due at least in part to the external force applied on the at least one of moveable and flexible wall.

13. The toy water gun of claim 12, further comprising a spring acting on the at least one of moveable and flexible wall.

14. The toy water gun of claim 12, wherein the water pressure chamber is one of a flexible bladder or a chamber having at least one fixed wall and a moveable wall that can be moved to expand or contract a volume of the chamber.

15. The toy water gun of claim 12, wherein the water pressure chamber is formed by the at least one fixed wall, an end wall connected thereto and the moveable wall, and the air pressure source is an air pump connected to the water gun housing.